

**BOGIDIELLA APRUTINA N. SP., A NEW SUBTERRANEAN AMPHIPOD
FROM PHREATIC WATERS OF CENTRAL ITALY¹)**

BY

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In the course of the researches on the subterranean phreatic waters of central and southern Italy, promoted by the Zoological Institute of the University of L'Aquila, Italy (Argano et al., 1975; Pesce & Silverii, 1976; Pesce et al., 1978; etc.), we had the opportunity to collect some specimens of amphipods of the genus *Bogidiella* Hertzog from freshwater wells at Colleraneseo, Teramo (Abruzzes).

Although the specimens were in poor condition and many of the pereopods and antennae were broken off, they undoubtedly represent a new species, referable, according to Ruffo (1973), to the group of hyporheic-interstitial forms of the genus *Bogidiella*.

The discovery of this species, described below, brings the total number of *Bogidiella* species from Italy to six, as well as it marks a significant extension of the range of the genus in this region.

To date, the species of *Bogidiella* reported from Italy are the following: *B. albertimagni* Hertzog from interstitial habitats of the rivers Adige and Piave and from wells near Verona, in northern Italy; *B. cbappuisi* Ruffo from the Gulf of Naples and from southern Italy; *B. vandeli* Coineau and *B. ichnusae* Ruffo & Vigna Taglianti from Sardinia; *B. tyrrhenica* Schiecke from the mesopsammon of the Gulf of Naples; and *B. aprutina* n. sp. from central Italy (Abruzzes).

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***Bogidiella aprutina* n. sp. (figs. 1-2)**

Material examined. — 3 ♂♂, 5 ♀♀, 3 juveniles, from fresh-water wells (nn.P.216-P.218) at Colleraneseo, Giulianova (Teramo, Abruzzes), 2 December 1974, coll. Pesce and Silverii (water depth: 6.0-6.5 m; temperature H₂O: 14.8° C-15.1° C; pH: 6.8-7.0; salinity: 0.90/00; bottom sediment composed of thin organogenic sandstone and small plant detritus); associated fauna: amphipods (*Niphargus longicaudatus* Costa, *Salentinella angelieri* Ruffo & Delamare), asellid isopods (*Proasellus* sp.), cyclopoid copepods (*Diacyclops antrincola* Kiefer, *Eucyclops serrulatus* (Fischer)), harpacticoid copepods (Canthocamptidae), ostracods, oligochaetes, turbellarians, water mites and some mosquito larvae.

¹) Contribution to the knowledge of the underground waters fauna in central and southern Italy: X.

Holotype (♀) and paratypes (2 ♂♂, 3 ♀♀, and 2 juveniles), preserved in alcohol 70% or partially dissected and mounted on coverlips in Faure solution, are deposited at the Museo Civico di Storia Naturale di Verona, Italy. Other paratypes (1 ♂, 1 ♀, and 1 juv.), partially dissected and mounted on coverlips in Faure solution, are in the author's collections at the Zoological Institute of the University of L'Aquila, Italy.

Diagnosis. — A middle-sized (1.9-2.7 mm) phreatic *Bogidiella* with mesosomites higher than long; maxillae 1 with outer lobe armed with simple and dentate spines and inner lobe with two naked spines; antenna 1 with flagellum of 8-9 articles and accessory flagellum 3-segmented; gnathopods elongated and of different size, the first slightly larger and longer than the second one; pereopods, all with large lenticular organs, characterized by a minutely sinuous outline, and with a very long dactylus; anterior edge of the propodus of pereopod VII with long slender setae; pleopods without endopod; telson wider than long, deeply incised, with two long spines on each side.

Description *). — Body elongated, length 1.9-2.7 mm. Pereon, pleon and coxal plates I-IV without particular characteristics as compared to those of the other species of the group; coxal plates V-VII with posterior lobe armed with a spine; pleonal epimera I-II with ventral edges slightly arcuate, posterior margin almost rectilinear and armed with one seta, postero-inferior angle acute and prominent; pleonal epimerus III with posterior margin concave and armed with two setae; branchial appendages elongated and visible only on segments IV-VI. Oostegites visible on pereopods III-V. Sexual dimorphism absent.

Antennae 1 about 1/2 the length of the body; flagellum of 8-9 articles; accessory flagellum 3-segmented, overreaching the second article of the main flagellum.

Antennae 2 with flagellum of five articles; excretory cone shorter than the third article of the peduncle; fourth and fifth articles subequal in length.

Labrum rounded.

Mandibles without remarkable characteristics: molar process large, pars incisiva smaller and elongated; lacinia mobilis dentate; palpus with second and third articles subequal in length, the second one armed with two inner setae, the third one armed with three apical and one subapical long setae and a series of hair-like setules on the outer edge.

Maxilla 1 with inner lobe about as long as the outer one, and armed with two apical slender setae; outer lobe large and armed with seven apical spines (2-3 naked, 2-3 unidentate, and 2 bi- or tri-dentate); palpus with elongated distal article, armed with two apical and one subapical setae.

Maxilla 2 with inner lobe longer than the outer one and armed with 5-6 (one plumose) apical setae, external lobe armed with 8-10 setae.

Labium with anterior lobe deeply incised.

Maxilliped with inner lobe with two stout, bidentate apical spines, external lobe

*) Description based on the holotype slides and on the paratypes partially dissected. Terminology and nomenclature after Ruffo & Vigna Taglianti, 1973.

short, not reaching the first article of the palp, and with three distal spines; palp with no remarkable characteristics.

Gnathopods 1 and 2 elongated, somewhat similar to each other; gnathopod 1 larger and longer than 2. Gnathopod 1 with one long plumose seta on the posterior edge of the basis; ischium with one seta on the outer edge; merus with 2 long

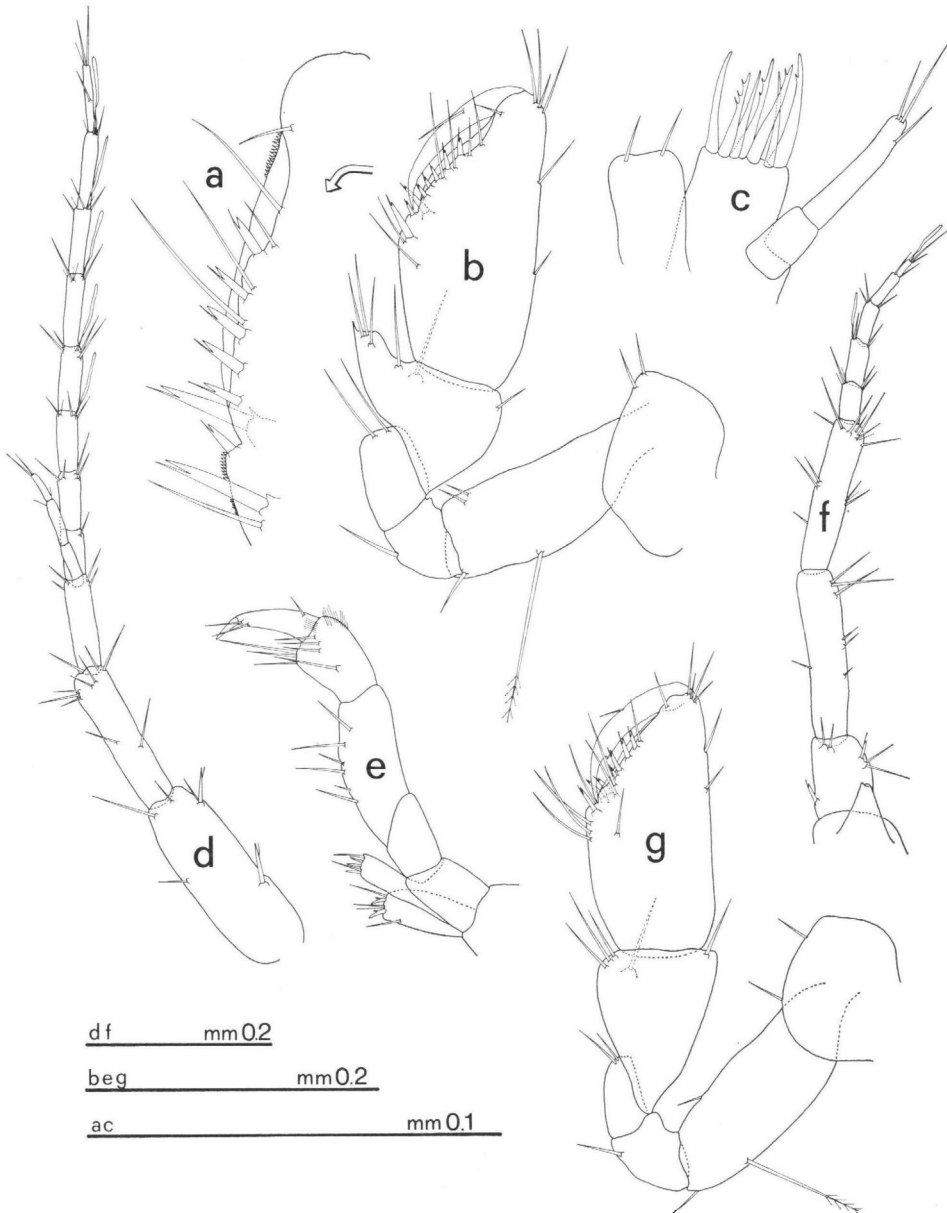


Fig. 1. *Bogidiella aprutina* n. sp. a, gnathopodal propod 1, detail; b, gnathopod 1; c, maxilla 1; d, antenna 1; e, maxilliped; f, antenna 2; g, gnathopod 2.

apical setae; carpus large, subtriangular, with marked lower prolongation, armed with 2-3 apical setae, two long setae on the distal part and one small setula on the inner margin; propodus subtrapezoidal, palmar margin inclined (palm index = 0.43-0.46) and armed with 8-9 bifid spines and 6-7 long setae; dactylus shorter than 1/2 of the palmar margin and with one seta on the outer side.

Gnathopod 2, basis with one seta on the posterior edge; ischium with one seta; merus with 2 apical setae; carpus triangular, without prolongation, armed with numerous setulae and five apical and subapical setae; propodus trapezoidal, with upper and lower edges subparallel; palmar margin inclined and subrectilinear (palm index = 0.41-0.48), armed with 6-7 bifid spines and 8-9 setae on the outer margin; dactylus shorter than 1/2 of the palmar margin and with one setula on the outer side.

Pereopods III-VII characterized by large lenticular organs with a sinuous outline and by a very long dactylus. Pereopods V-VII similar and of increasing length. Pereopods VII the longest and as long as about 2/3 the length of the body; propodus with 7-8 long slender setae on the inner margin; dactylus very long, about 2/3 of the length of the propodus, armed with two small setulae near the base of the claw.

Pleopods similar to each other, lacking an endopodite; peduncle long and with two retinacula; exopodite short, each article armed with two long, plumose apical setae.

Uropod 1 with equal rami, slightly shorter than the peduncle; peduncle with two subapical and two subbasal spines; rami with 4-5 non-differentiated apical spines, the longest more than 1/2 the length of the ramus. Uropod 2 with rami longer than the peduncle, and of different length, the inner slightly shorter than the outer one; peduncle with two distal spines; each ramus with 4-5 non-differentiated distal spines, one longer than 1/2 the length of the ramus. Uropod 3 without particular characteristics: peduncle short and armed with one spine; rami long and subequal, each armed with a group of 5-6 long distal spines and 4-6 spines on the sides.

Telson slightly larger than long, with a deeply concave posterior margin; each side armed with two long apical spines, both longer than the telson, and two small, plumose subapical setae.

Affinities. — *B. aprutina* n. sp. is close to *B. chappuisi*; it is also similar to *B. ichnusae* and to *B. minotauri* Ruffo & Schiecke from the Island of Crete.

In particular with *B. chappuisi* the new species shares numerous features, i.e., the morphology of the gnathopods as well as the presence of a single plumose seta on the posterior edge of the basis; the number of apical spines on the telson; the absence of endopodites on the pleopods, and, at last, the presence of elliptical organs on pereopods III-VII; on the other hand, from the above species *B. aprutina* n. sp. is well distinguishable by the greater size, the antenna 2, the sinuous outline of the elliptical organs, the denticulation of the outer lobe of maxilla 1, and by

the length of the dactylus of pereopod VII. Moreover, *B. chappuisi* and *B. aprutina* differ from each other also from an ecological point of view, as the first belongs to the group of the litoral interstitial species, the second one to that of the hyporheic interstitial (phreatic) species (according to Ruffo, 1973).

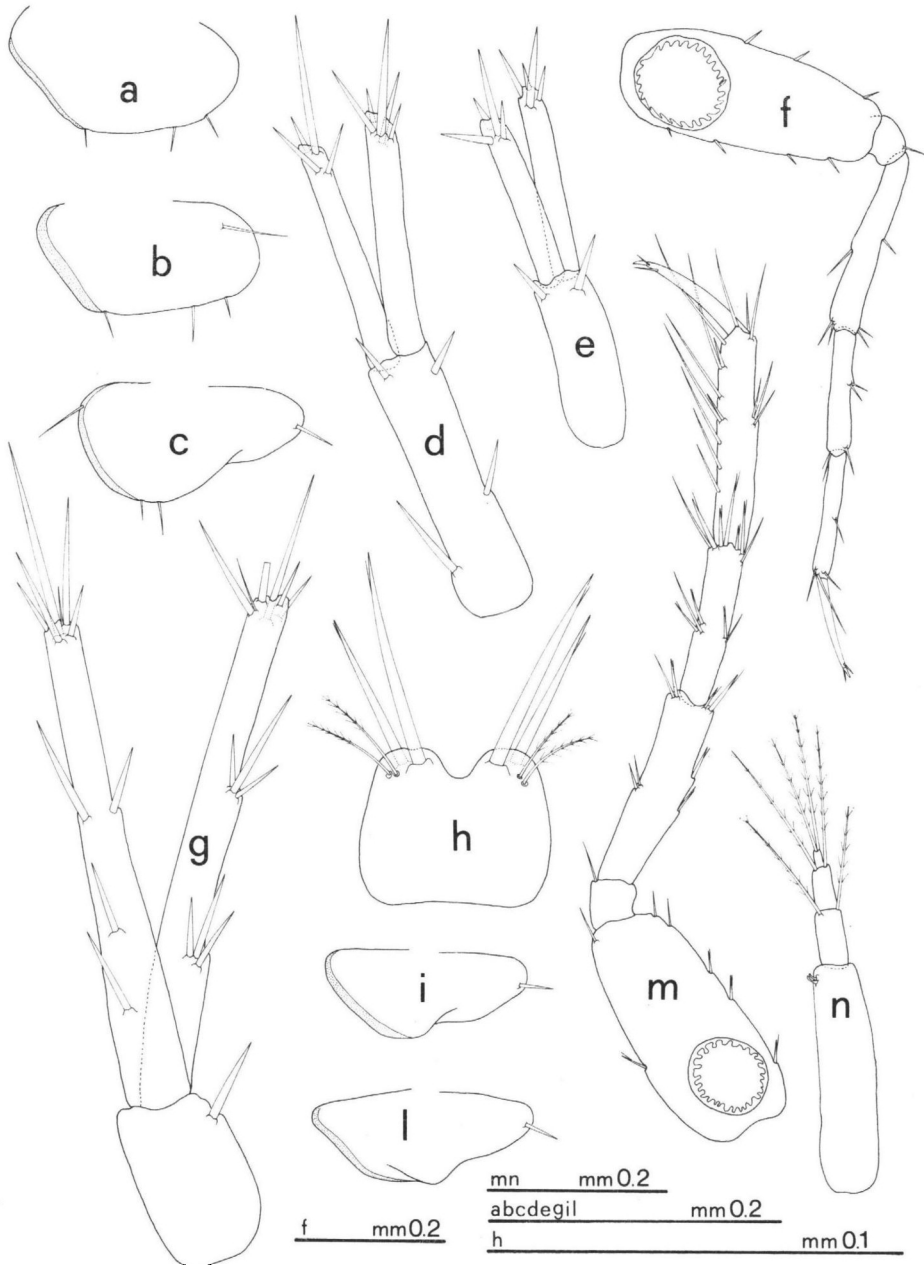


Fig. 2. *Bogidiella aprutina* n. sp. a, b, c, coxal plates 3, 4, 5; d, uropod 1; e, uropod 2; f, pereopod VI; g, uropod 3; h, telson; i, coxal plate 7; l, coxal plate 6; m, pereopod VII; n, pleopod 3.

B. aprutina n. sp. and *B. ichnusae* resemble each other in the denticulation of the spines on maxilla 1, the length of the dactylus of pereopod VII, the shape and the armature of the propodus of the same appendage, the morphology of the pleopods and the elliptical organs on pereopods III-VII.

To *B. minotauri* the new species is closely related in the morphology and the armature of the telson, the denticulation of the outer lobe of maxilla 1 and by the presence of elliptical organs on pereopods III-VII.

From all the above species as well as from the others, *B. aprutina* n. sp. can immediately be distinguished by the remarkable length of the dactylus of the pereopods V-VII, by the palm index of gnathopod 1, and by the length of the peduncle of the pleopods.

At least in the particular sinuous outline of the elliptical organs, the new species is also similar to *B. vandeli*, from which it differs in many other morphological characteristics, as, e.g., the denticulation of the inner lobe of maxilla 1, the length of the dactylus of the propodus of pereopod VII, etc.

RÉSUMÉ

On décrit *Bogidiella aprutina* n. sp., un nouvel Amphipode souterrain des eaux douces phréatiques de l'Italie centrale (Abruzzes).

La nouvelle espèce, qui entre dans le groupe des formes 'hyporhéiques-interstitielles' d'après Ruffo (1973), se révèle bien voisine de *B. chappuisi* ainsi que très proche de *B. ichnusae*, *B. minotauri* et *B. vandeli*.

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